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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Petrus Johannes Walterus Maria Van Den Bosch

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SHELL OIL COMPANY

P O BOX 2463

HOUSTON, TX 772522463

EXAMINER

SINGH, PREM C

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/561,690	Applicant(s) VAN DEN BOSCH ET AL.	
	Examiner PREM C. SINGH	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Amendment to claims 3 and 5 and addition of new claims 9-11 is noted.

The status of claim 1 should be changed from "currently amended" to "previously amended"
2. Rejection of claim 5 under 35 U.S.C. 112, second paragraph, is withdrawn.

Due to amendment to claims and addition of new claims, new rejection follows.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
 1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.

Art Unit: 1797

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
6. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Myrstad et al (WO 98/10036).
7. With respect to claims 1 and 2, Myrstad discloses a process for producing a pipeline transportable crude oil from a bitumen feed (See page 3, lines 9-11). The process comprises:
 - (1) Dividing the bitumen appropriately in two parts (See page 3, lines 11-12);
 - (3) Upgrading first part of the heavy oil (bitumen) by thermal cracking (See page 3, lines 11-16);
 - (4) Separating the upgraded oil into kerosene and distillate components (See page 3, lines 13-14);

(5) Combining the second part obtained in step (1) and light fraction obtained in step (4) to obtain a pipeline transportable crude oil (See page 3, lines 16-19).

Myrstad invention does not specifically disclose step (2), however, the invention does disclose that a typical untreated bitumen from Venezuela contains 15% middle distillates having boiling point between 150 and 350°C and 75% fuel oil having boiling point more than 350°C (See page 9, line 37; page 10, line 5, and 18-22). It is known to those skilled in the art that fuel oil is the required feed in thermal cracking and middle distillates are the value-added products needed in the process. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Myrstad invention and separate the middle distillate portion (150 to 350°C fraction) in an additional step (2), and take only the heavy oil portion (>350°C fraction) into the thermal cracking reactor. This will enhance the middle distillate fraction to be used in step (5) and increase the production of pipeline transportable crude oil.

It is to be noted that Myrstad divides the bitumen in step (1) “appropriately”. Thus, one skilled in the art would divide the bitumen feed for optimum operation in any proportion, including as claimed.

Myrstad invention does not specifically disclose step (6) of the claimed process, however, the invention does disclose, “The upgraded part of the heavy oil is then mixed with the remaining untreated heavy oil to an oil exhibiting desired transportation properties” (Page 3, lines 16-19). Obviously, Myrstad is also producing a heavy fraction after separating the upgraded part. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Myrstad invention and use the

Art Unit: 1797

heavy fraction for producing heat needed to preheat the feed entering the cracking unit and conserve heat.

8. With respect to claims 3, 4 and 11, Myrstad invention does not specifically disclose three (light, intermediate, and heavy) fractions. However, the invention does disclose two fractions ((54% middle distillates (150 to 350°C fraction) and 46% fuel oil (>350°C fraction)) (See page 10, lines 10-16). Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Myrstad invention and take out an additional cut of an intermediate fraction (350-510°C fraction) from the distillation column, leaving only 510°C+ fraction as residue, as claimed, and add this intermediate cut in step (5) and enhance the overall production of pipeline transportable crude oil.

9. With respect to claim 5, Myrstad invention does not specifically disclose thermal cracking of the intermediate fraction.

Since the lighter components are more desired for blending in step (5), it would have been obvious to one skilled in the art at the time the invention was made to modify Myrstad invention and take the intermediate fraction (350-510°C fraction) to the thermal cracking unit to increase the production of lighter fractions to be used in step (5) and reduce the undesired heavy fractions.

As discussed under claim 1, Myrstad invention is not specifically disclosing about using the heavy product in power/heat generation, however, the invention does disclose producing a heavy fraction after separating the upgraded part. Thus, it would have been

Art Unit: 1797

obvious to one skilled in the art at the time the invention was made to modify Myrstad invention and use the heavy fraction for producing heat needed to preheat the feed entering the cracking unit and conserve heat.

10. With respect to claims 6-8, Myrstad invention discloses that the cracking is carried at a pressure of 1 to 10 atm (1 to 10 bar) and at bulk temperatures in the range of 200 to 500°C (See page 7, lines 4-6). In preferred embodiments, Myrstad conducts cracking in a hammer mill type of apparatus (See page 5, lines 15-16), however, one skilled in the art could use any apparatus, including a soaker vessel as claimed, for an effective cracking.

11. With respect to claims 9 and 10, Myrstad invention does not specifically disclose the cut temperatures of the light fraction, however, the invention does disclose that the light portion to be separated from the heavy oil is an "appropriate part" (See page 3, lines 11-12). Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Myrstad invention and separate the fraction with appropriate cut points, including in a range as claimed for an improved process.

Response to Arguments

12. Applicant's arguments filed 04/24/2008 have been fully considered but they are not persuasive.

13. The Applicant argues that Myrstad discloses a process involving essentially three steps.

The applicant's argument is not persuasive because Myrstad discloses steps (1), (3), (4) and (5). Although steps (2) and (6) are not disclosed specifically, but it would have been obvious to one skilled in the art, as discussed in detail under claim 1 above.

14. The Applicant argues that only the residual fraction in step (3) is thermally cracked. Such distillation prior to thermal cracking is not taught or suggested by Myrstad.

The Applicant's argument is not persuasive because Myrstad discloses that a typical untreated bitumen from Venezuela contains 15% middle distillates having boiling point between 150 and 350°C and 75% fuel oil having boiling point more than 350°C (See page 9, line 37; page 10, line 5, and 18-22). As discussed in the Office action above under claim 2, the purpose of thermal cracking is to convert heavy oil into light and heavy fractions. When the heavy oil feed has middle distillates and heavy fraction, one skilled in the art would take only the heavy fraction into the cracking unit and thus decrease the load on the cracker and enhance the middle distillate yield.

15. The Applicant argues that step (4) is not taught by Myrstad.

The Applicant's argument is not persuasive because step (4) is disclosed by Myrstad (See page 3, lines 13-14).

16. The Applicant argues that step (5) is not taught by Myrstad which teaches combining the entire cracked hydrocarbon product with the untreated heavy oil.

The Applicant's argument is not persuasive because step (5) is disclosed by Myrstad (See page 3, lines 16-19) as discussed under claim 1 in the Office action above. Myrstad teaches, "The upgraded part of the heavy oil is then mixed with the remaining untreated heavy oil to an oil exhibiting desired transportation properties" (Page 3, lines 16-19). It is to be noted that cracking produces "upgraded" and "non-upgraded" hydrocarbons. Only "upgraded" part is added in the untreated heavy oil.

17. The Applicant argues that step (6) is not taught by Myrstad.

The Applicant's argument is not persuasive because step (6) is suggested by Myrstad as discussed under claim 1 above.

18. The Applicant argues,

"The feed to the thermal cracking process of Myrstad is bitumen, not fuel oil. There is no indication in Myrstad that the fuel oil fraction is ever separated from the bitumen, either before or after thermal cracking. Hence, fuel oil is not "the required feed in thermal cracking". Myrstad clearly teaches bitumen can be used as feed to a thermal cracking process, and further suggests it is not necessary to separate out the fuel oil fraction from the bitumen prior to thermal cracking".

The Applicant's argument is not persuasive because one skilled in the art would take only the fuel oil part of bitumen to the thermal cracking unit and not the middle distillates part because middle distillates are the required product as discussed earlier.

19. The Applicant argues,

"Myrstad contradicts the statement that middle distillates are value added products "needed in the process". As in the case of fuel oil, the middle distillates in Myrstad are never separated from the bitumen feed before or after thermal cracking. The bitumen feed is thermally cracked without separation of the middle distillates or the fuel oil, and the entire cracked hydrocarbon product is added to the untreated bitumen to significantly lower its pore point and viscosity. Thus, middle distillates are not needed in the process of Myrstad, at least not as a separate fraction. There is simply no motivation provided by Myrstad to divide the bitumen into different fractions by distillation prior to, or after, thermal cracking".

The Applicant's argument is not persuasive because Myrstad discloses, "An appropriate part of the heavy oil to be transported is separated out and upgraded to a more liquid oil, consisting for example preponderantly of kerosene and distillate components. The upgraded part of the heavy oil is then mixed with the remaining untreated heavy oil to an oil exhibiting desired transportation properties (See page 3, lines 11-19).

20. The Applicant argues,

“The fact that Myrstad knew that middle distillates and fuel oil boiling range components were present in the cracked hydrocarbon product, but chose not to separate these fractions, and instead mixed the entire cracked hydrocarbon product with the untreated bitumen, supports the unobviousness of claims 3 and 4. Clearly Myrstad (who is one skilled in the art) did not believe it was necessary or desirable to separate middle distillates or fuel oil fractions from the thermally cracked product prior to mixing it with the untreated bitumen”.

The Applicant’s argument is not persuasive because Myrstad does not mix the entire cracked hydrocarbon product, instead mixes only “upgraded to a more liquid oil, consisting for example preponderantly of kerosene and distillate components”.

21. The Applicant argues,

“In the Office action it is stated that it would have been obvious to increase the production of lighter fractions to be used in step (5) "Since the lighter components are more desired for blending in step (5)". The basis for this statement is unclear. Certainly it is not based on Myrstad, because Myrstad never separates the lighter components from the cracked hydrocarbon product. As discussed above, the entire uncut cracked hydrocarbon product is added to the untreated bitumen in Myrstad”.

The Applicant’s argument is not persuasive because Myrstad mixes only “upgraded to a more liquid oil, consisting for example preponderantly of kerosene and distillate components” as discussed before.

22. The Applicant argues that for all of the above reasons and in view of the amendments, claims 1-8 and new claims 9-10, are believed to be patentable and in condition for allowance.

The Applicant's argument is not persuasive because Myrstad teaches/suggests the claimed invention and a *prima facie* case of obviousness has been established.

Conclusion

23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PS 052508

/Glenn A Caldarola/
Acting SPE of Art Unit 1797